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THE EPISTOMAL APPENDAGES OF MOSQUITO LARVÆ.

BY FREDERICK KNAB,

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(PLATE X.)

In sorting mixed captures of mosquito larvæ some trouble was experienced, partly on account of the close resemblance of some of the species, but more particularly on account of the considerable variation, not only in color, but also in such characters as the length and form of the antennæ, the breathing-tube, gills, etc. To add to the difficulty, there is more or less of a change with each moult.

The head of the larva bears upon its dorsal surface a number of conspicuous hairs or tufts of hairs. Upon comparison of the different species and their stages, it was found that these hairs existed in all of them. They differed not only in each species examined but also in each of the stages. Three pairs of these hairs or hair tufts are conspicuous appendages of the head and readily available as specific characters. They may consist of single hairs, of two or three hairs with a common base, or of fan-shaped tufts of hairs—each species presenting specific distinctions in the number of hairs in the tufts, as also in their length, coarseness and the relative position. Their bases are inserted into sockets so that they sway about with the motions of the larva. Doubtless they are sensory in function and help to keep the larva in touch with its surroundings. These appendages are all situated upon the epistoma—using that term in the sense of Schioedte and other European writers for the part included within the epicranial sutures. The appendages are arranged upon the area between the antennæ and usually somewhat farther back. However their relative position differs considerably, not only in different species, but also in the different stages. The accompanying diagrams will show these differences in a few forms. In the mature larva of *Culex restuans* the six appendages are in a transverse series, nearly in a line. The innermost pair of these appendages I have called the median pair; the two on the outer sides of these the intermediate pair; the third pair, close to the margin and near the base of antennæ, the outer pair.

In many species the median pair is inserted farther back and sometimes come almost longitudinally into line with the intermediate

pair. Two other pairs of hairs or tufts occur upon the epistoma. Usually they are very small, and in some forms, at least of the mature larva, are absent altogether. One pair is situated farther forward and nearer together than the "median" pair. The other pair is located well back and near the epicranial suture, nearly opposite the eyes. In the first stage these last two pairs of appendages are equally developed with the other three pairs which afterwards become so conspicuous. In the first stage the appendages all consist of single hairs, differing, however, in relative length and position in the different species. One species only, in my experience, is an exception. In the first stage of *Culex triseriatus* the pair of appendages nearest together consist of fine hairs in twos. In the succeeding stages this pair develops into tufts very similar to the outer pair.

The three most highly developed pairs of epistomal appendages, which I have termed the median, intermediate and outer pairs, are present in all the species of *Culex* larvæ that I have examined. The median and intermediate pairs develop very differently in the different species. For example, in *Culex territans* they usually continue as single hairs throughout the four stages, while in *Culex restuans* the number of hairs in each appendage increases with each succeeding stage. The outer pair consists of hairs in tufts in the last stage of all the species I have examined. These tufts also differ in length, coarseness and the number of hairs in the different species. In *Culex cantans*, for example, there are four or five coarse hairs in the tuft, while in *Culex territans* there is an ample fan-shaped tuft of ten or twelve hairs. In the first stage this outer pair of appendages, like the others, is of single hairs. In the second stage these outer appendages usually consist of two hairs, in some cases of three or four, and the number of hairs increases in the third and fourth stages. As one would naturally suppose, these appendages, like other characters, are subject to some variation, but nevertheless are useful in determining species and stages. My experience has been with a limited number of species, but as far as I have gone each species has proved sufficiently distinct in these characters.

The terminology "median," "intermediate" and "outer" pairs of appendages was adopted when my descriptive work was first begun, and has been retained for want of a better one. It is, however, hardly satisfactory.

Other hairs, or groups of hairs, also occur on various other parts

of the head, particularly on the ventral surface. These, too, are differently developed in the different species but no consideration is given them here.

While, as above remarked, variation occurs in the epistomal appendages of the species of mosquito larvæ, those of a particular brood are fairly constant.

EXPLANATION OF PLATE X.

Epistomal appendages of mosquito larvæ.

- | | | | | | |
|------|-----|--------------------------|---------|-------|--------------|
| Fig. | 1. | <i>Culex triseriatus</i> | Say, | stage | I. |
| " | 2. | " | " | " | II. |
| " | 3. | " | " | " | III. |
| " | 4. | " | " | " | IV. |
| " | 5. | <i>Culex territans</i> | Walk., | " | I. |
| " | 6. | " | " | " | II. |
| " | 7. | " | " | " | III. |
| " | 8. | " | " | " | IV. |
| " | 9. | " | " | " | " variation. |
| " | 10. | <i>Culex restuans</i> | Theob., | stage | IV. |
| " | 11. | <i>Culex canadensis</i> | Theob., | stage | IV. |
| " | 12. | <i>Culex pipiens</i> | Linn., | stage | IV. |
| " | 13. | <i>Culex cantans</i> | Meig., | stage | IV. |

Class I, HEXAPODA.

Order V, LEPIDOPTERA.

A NEW NAME FOR A TINEID GENUS.

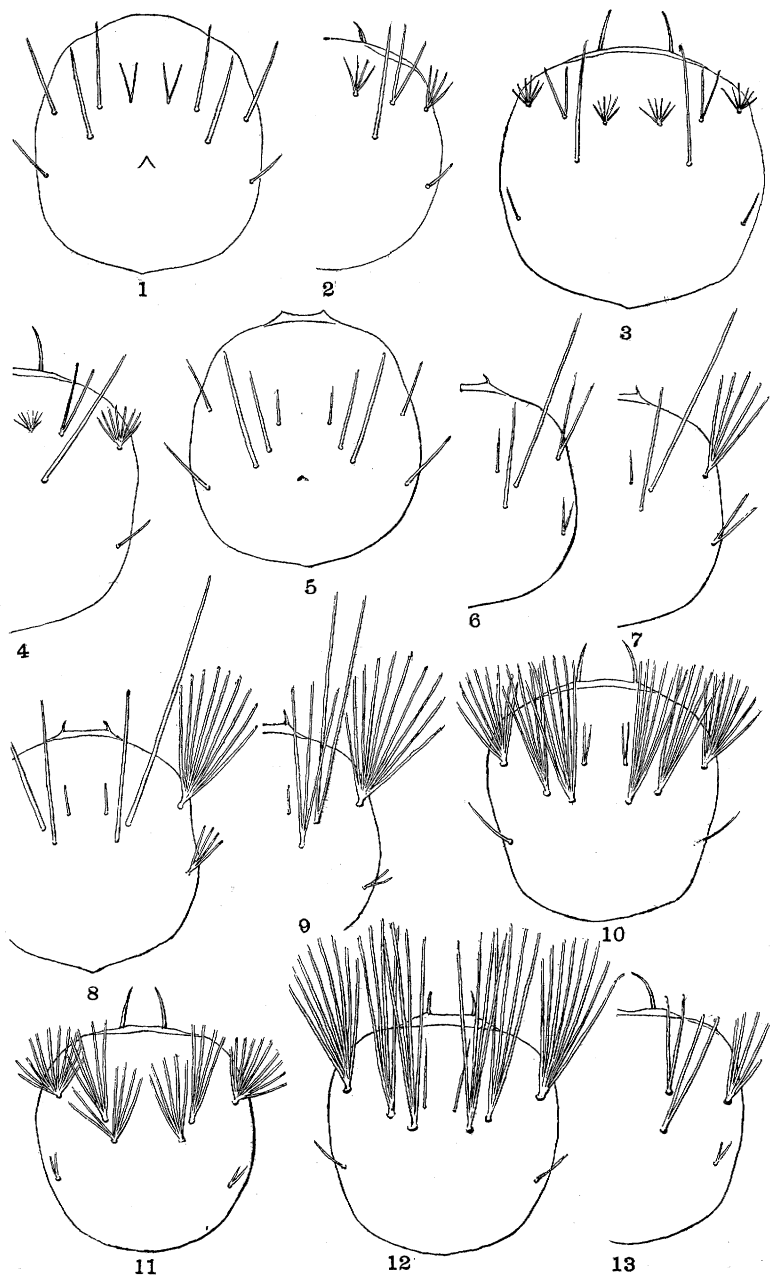
BY AUGUST BUSCK,

ST. LOUIS, MO.

Paraclemensia, new name.

Brackenridgia Busck, Proc. Ent. Soc. Wash., V, 193, 1903, not Ulrich, Tr. Amer. Micr. Soc., xxiii, 90, 1902.

Prof. T. D. A. Cockerell has kindly called my attention to the fact that the name *Brackenridgia* used by me for the genus of which *acerifoliella* Fitch (Dyar, Cat. Am. Lep., No. 6477) is the type and at present the only recognized species, is preoccupied in the Crustacea. I am glad to adopt a suggestion from Prof. Cockerell and would substitute the new generic name *Paraclemensia*, thus retaining in the name the tribute to the founder of the study of Microlepidoptera in this country.



Epistomal appendages of Mosquito larvæ.